

What is claimed is

- 1 1. An electrical connector comprising:
  - 2 a) a plurality of electrical conductors, each electrical conductor having a
  - 3 contact tail, an intermediate portion, a compliant portion and a contact
  - 4 portion;
  - 5 b) a first housing, with the intermediate portion of each of the plurality of
  - 6 electrical conductors attached to the first housing;
  - 7 c) a second housing, with the contact portions of each of the plurality
  - 8 electrical conductors attached to the second housing; and
  - 9 d) a compliant coupling between the first housing and the second housing.
- 1 2. The electrical connector of claim 1 wherein each of the compliant portions
- 2 comprises an elongated segment with bends therein.
- 1 3. The electrical connector of claim 2 wherein each of the compliant portions
- 2 includes a curve.
- 1 4. The electrical connector of claim 2 wherein each of the compliant portions
- 2 includes a plurality of curves.
- 1 5. The electrical connector of claim 4 wherein each of the compliant portions
- 2 includes two curves, curving in opposite directions.
- 1 6. The electrical connector of claim 1 wherein the first housing is an insulative
- 2 housing.
- 1 7. The electrical connector of claim 1 wherein the second housing has gathering
- 2 features formed therein.
- 1 8. The electrical connector of claim 7 wherein the gathering feature comprises at
- 2 least one tapered surface.
- 1 9. The electrical connector of claim 1 wherein the second housing has a plurality of
- 2 side walls bounding a mating area and the contact portions of each of the plurality
- 3 of electrical conductors is disposed within the mating area.

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- 1 10. The electrical connector of claim 9 wherein the contact portions are disposed in  
2 the mating area in a rectangular array having rows and columns and the electrical  
3 connector further comprises a plurality of conducting plates disposed in parallel,  
4 each plate being disposed between adjacent rows of contact portions.
- 1 11. The electrical connector of claim 10 wherein the second housing is an insulator.
- 1 12. The electrical connector of claim 1 wherein portions of the plurality of electrical  
2 conductors are separate insulative portions to form subassemblies.
- 1 13. The electrical connector of claim 12 further comprising a first plurality of  
2 conductive plates, each conductive plate having:  
3 i) an intermediate portion attached to the insulative portion of a  
4 subassembly;  
5 ii) a plurality of contact tails extending from the intermediate portion of the  
6 plate;  
7 iii) a plurality of compliant portions having distal ends extending from the  
8 intermediate portion of the plate;  
9 iv) a plurality of contacts electrically connected to the distal ends of the  
10 plurality of compliant portions, wherein the plurality of contacts is  
11 attached to the second housing.
- 1 14. The electrical connector of claim 13 additionally comprising a second plurality of  
2 conductive plates, each of the second plurality of conductive plates attached to the  
3 second housing and at least one of the plurality of contacts on one of the first  
4 plurality of conductive plates.
- 1 15. The electrical connector of claim 14 wherein each of the second plurality of  
2 conductive plates is attached to one of the plurality of contacts on each of the first  
3 plurality of conductive plates.
- 1 16. The electrical connector of claim 1 wherein the complaint coupling comprises at  
2 least one recess in the first housing with a lip extending into the recess and a tab  
3 projecting from the second housing, with the tab engaging the lip.

- 1 17. The electrical connector of claim 16 wherein the compliant coupling further  
2 comprises a stop spaced apart from the tab.
- 1 18. The electrical connector of claim 1 wherein the compliant coupling comprises  
2 means for allowing motion in the plane between the first housing and the second  
3 housing while restraining motion along the line between the first housing and the  
4 second housing.
- 1 19. An electrical connector comprising:  
2 a) a plurality of subassemblies disposed side-by side, each subassembly  
3 comprising:  
4 i) a plurality of electrical conductors, each electrical conductor  
5 having a contact tail, an intermediate portion, a compliant portion  
6 and a contact portion;  
7 ii) an insulative portion encapsulating the intermediate portions of the  
8 electrical conductors with the compliant portions extending from  
9 the insulative portion;  
10 b) a cap receiving the contact portions of the plurality of subassemblies and  
11 holding the contact portions, ~~with the compliant portions extending from~~  
12 ~~the insulative portion~~, whereby the cap may move relative to the insulative  
13 portions of the subassemblies.  
14
- 1 20. The electrical connector of claim 19 wherein each of the subassemblies holds the  
2 intermediate portions in a plane.
- 1 21. The electrical connector of claim 20 additionally comprising a shield member <sup>60</sup>  
2 attached to the insulative portion parallel to the plane of the intermediate portions.
- 1 22. The electrical connector of claim 21 wherein the shield member comprises an  
2 intermediate portion adjacent the insulator, a plurality of compliant portions  
3 extending from the intermediate portion and a forward portion attached to the cap.
- 1 23. The electrical connector of claim 22 wherein the forward portion has a plurality of  
2 contacts thereon.

- 1 24. The electrical connector of claim 23 additionally comprising a plurality of second  
2 type shields disposed within the cap, each of the second type shields connected to  
3 at least one contact on a forward member of at least one subassembly.
- 1 25. The electrical connector of claim 19 wherein the compliant portions comprises an  
2 elongated segment with bends formed therein.
- 1 26. The electrical connector of claim 25 wherein the bends comprise smooth curves.
- 1 27. The electrical connector of claim 26 wherein the bends comprise two smooth  
2 curves, curving in opposite directions.
- 1 28. The electrical connector of claim 19 additionally comprising a housing receiving  
2 at least a portion of the insulative portions of the plurality of subassemblies.
- 1 29. The electrical connector of claim 28 additionally comprising a compliant coupling  
2 between the housing and the cap.
- 1 30. The electrical connector of claim 29 wherein the compliant coupling comprises  
2 means for allowing motion in the plane between the housing and the cap.
- 1 31. The electrical connector of claim 29 wherein the compliant coupling comprises  
2 means for allowing motion in the plane between the housing and the cap and  
3 inhibiting motion along a line between the cap and the housing.
- 1 32. The electrical coupling of claim 29 wherein the compliant coupling comprises a  
2 tab engaged under a lip.
- 1 33. The electrical connector of claim 19 forming a first connector in a matrix  
2 assembly comprising a second connector, the second connector comprising:  
3 a) a second plurality of subassemblies, each subassembly comprising:  
4 i) a plurality of electrical conductors, each electrical conductor  
5 having a contact tail, and intermediate portion and a contact  
6 portion, the contact portion shaped to mate with a contact portion  
7 of an electrical conductors in the first electrical connector;

- 8 ii) an insulative portion encapsulating the intermediate portions of the  
9 electrical conductors with the contact portions extending from the  
10 insulative portion; and  
11 b) a housing receiving at least the contact portions of the plurality of  
12 subassemblies, the housing having a mating face adapted to engage the cap  
13 of the first connector.

1 34. The electrical connector of claim 33 wherein the cap comprises gathering features  
2 whereby the mating face of the housing is guided into mating position relative to  
3 the cap.

- 1 35. An electrical connector, adapted for use in a matrix assembly comprising:  
2 a) a first plurality of wafers, each wafer comprising a column of signal  
3 contacts, each signal contact having an intermediate portion, a contact tail,  
4 and a mating portion, each of the wafers further having a insulative portion  
5 encapsulating the intermediate portions of the signal contacts;  
6 ~~b) a first housing holding the wafers in parallel with the mating portions held~~  
7 ~~in a first planar array;~~  
8 ~~c) a second plurality of wafers, each wafer comprising a column of signal~~  
9 ~~contacts, each signal contact having an intermediate portion, a contact tail,~~  
10 ~~a mating portion and curved portion having at least two opposing curves~~  
11 ~~joining the intermediate portion to the mating portion, each of the wafers~~  
12 ~~further having a insulative portion encapsulating the intermediate portions~~  
13 ~~of the signal contacts and leaving the curved portion un-encapsulated;~~  
14 ~~b) a second housing holding the insulative portion of the second plurality of~~  
15 ~~wafers in parallel;~~  
16 ~~c) a cap connected to the contact portions of the second plurality of wafers,~~  
17 ~~the cap holding the contact portions in a second planar array of dimensions~~  
18 ~~matching the first planar array.~~